

carefully traced, and some of the theories propounded on this subject have been discussed on this occasion; but we do not think it necessary to consider them here, as the *L. clandestina* does not offer anything peculiar in this respect.

It is also to be regretted that M. Duchartre has not been able to follow out the mode of formation of the embryo and its subsequent germination.

Notwithstanding these slight omissions, the investigation of M. Duchartre is not less one of the most complete on the anatomy and organogeny of a particular vegetable; it has appeared to us very exact in all the points which we have been able to verify, the author is quite conversant with the modern labours relative to the different subjects which he has treated, and we are of opinion that it would be desirable for the progress of botany that the science should possess several anatomical monographs made with the same care. For these reasons, we propose to the Academy to give its approbation to the memoir of M. Duchartre, and to insert it in the 'Mémoires des Savants Etrangers.'

LXI.—*On the Growth of the Stem of Palms, and on the Decurrence of the Leaves.* By M. VON MARTIUS*.

PERMIT me to present to you some pages of the Bulletin of our Academy, in which I have stated the results of my researches on the growth of the stem of Palms, and on the decurrence of the fibres. These results may be reduced to the following points:—

1. The stem of Palms does not contain more fibres than are destined to enter sooner or later into the leaves.

2. The fibres originate on the summit of the stem, *in nucleo gemmæ, vel in phyllophoro Mirbelii*, between the new and plastic parenchyma which there forms a peculiar conical layer, covering, like a funnel, the more aged parts. They are always external with relation to the others, which are already formed, and a little higher.

3. The points of origin of the fibres are organically predisposed; we find, in these points, the fibres situated obliquely, and converging at their upper ends. They are elongated from the two ends, that is to say, *they grow from below upwards and from above downwards.*

4. The upper extremity of these fibres is directed towards the base of the young leaf; the latter originates in the form of a cellular fold (*plica, crista*) in the centre of the bud, and is conducted toward the periphery on becoming enlarged.

* Being an extract of a letter to M. Flourens, Comptes Rendus for April 7, 1845.

5. The lower extremity is obliquely prolonged below, and terminates, in the form of an extremely slender and exclusively parenchymatous filament, on a peripheral layer. This layer is wholly different from the liber of the Dicotyledons with relation to the history of its development; it may however be compared to that organic system as regards its constituent elements.

6. The spot where the upper extremity of the filament enters into the leaf, is either on the same side of the stem by which it makes its decurrence, or on the side diametrically opposite. In this second case the fibre passes throughout the stem.

7. There are necessarily decussations for each filament. Some decussate the others in the central part of the stem; others by bending suddenly to enter a leaf on the side of their origin.

8. The growth is effected in an organic solidarity between the formation of the elementary organs and the laws of the position of the leaves. It is especially this *position* and the *succession* of the systems of phyllotaxis (which generally increase by specific complications in each species of palm), that we must regard as the conditions of the modifications in the decurrence of the fibres and the formation of the wood*.

9. The oldest part of the filaments is not found at either their upper or lower extremity; they have their most complete development in the middle part of their decurrence. Below they consist only of parenchymatous cells; at their upper extremity they are divided into several finer vessels which enter the leaves.

10. The lower extremity does not extend to the roots; it does not go beyond the *collum*, where is the organic separation of the *descensus* and the *ascensus*.

11. The stem becomes more ligneous and harder by the growth of the fibres which ascend and which make their decussations, and likewise the parenchyma between the fibres becomes thicker and harder. The hardening is effected in a direct ratio to the age of the tree; and as the organic elements first formed and homologous are grouped at the periphery, the stem is harder in its circumference.

You see that these results are not in contradiction with the ideas propounded by MM. de Mirbel and Mohl; they however differ in some less essential points. M. Mohl does not mention in his memoir (*De Structura Palmarum in Mart. Palm. Brasil.*) the passage of the filaments from one side of the stem to the other; nor has he explicitly declared that they grow in two directions, *sursum* and *deorsum*. With respect to the ideas of your illustrious academician, M. de Mirbel, I quite agree with all that

* I have demonstrated in what manner the four forms of the stem of the Palms, defined by M. Mohl, owe their different organization to the condition of the phyllotaxis, to the number and length of the internodes, &c.

he has stated on the structure of the fibres; but I am not of his opinion with regard to the first degree of the development of the leaf, seeing that at the beginning it does not appear to me to have the form of a hood, but rather that of a small crest (*crista* or *plica*) with a vertical direction.

My observations have been especially made on the *Chamadorea elatior*, the subterraneous *caudices* of which are ramified, and present in their buds all the conditions necessary for the examination of the origin both of the elementary organs and of the leaves, branches and *régimes*. These observations have also convinced me that the bicarinated leaf, which often commences the formation of the leaves in the branches of the Monocotyledons, and which is repeated in the morphology of the spatheles of the *Gramineæ*, is not formed by the coalescence of two leaves. It is only a solitary leaf, furnished with an extremely thin lamina, and which soon disappears. You are aware that the nature of these leaves has long been a subject of discussion by MM. Turpin and Robert Brown, and recently by M. Röper, whose results agree with mine.

LXII.—*Botanical Notices from Spain.* By MORITZ WILLKOMM*.

[Continued from p. 185.]

No. III. ARANJUEZ, 8th of July 1844.

ON the 18th of June I left Valencia, which had detained me within its walls longer than I wished. Immediately on leaving the charming Huerta, you enter a wood of olive and St. John's bread trees (*Ceratonia Siliqua*) with *Kentrophyllum lanatum*, DeC., growing in great plenty beneath them, which accompanied us from here almost to Madrid. So long as we were in the kingdom of Valencia, the country was very fertile, well-cultivated, and clothed with timber; the broad valley of Incar filled with rice-fields, the view of the romantic Sierra de Cullera, and the environs of the friendly town St. Felipe, were in particular among the fairest regions I had hitherto seen in Spain. As soon, however, as you have traversed the Pass of Almansa, you come into a desert, treeless, thinly-peopled, elevated plain in the province of Albacete, belonging to the kingdom of Murcia; low, uniform hills of chalk alternating with wheat-fields and waste sterile plains clothed with solitary specimens of an umbelliferous plant which appeared to me to be *Elæoselinum fatidum*, Boiss., and with *Retama sphaerocarpa*, Boiss. Still more desert and equally devoid of trees is the country beyond Albacete, at the entrance into the poor province of La Mancha, the villages of which lie so scattered that they resemble heaps of stones and ruins more than human abodes. All this ren-

* Translated from the Botanische Zeitung, Nov. 8, 1844, and communicated by A. Henfrey, F.L.S.